losa, Lyginopteris, Cupressinoxylon, Dadoxylon, and other genera. A memoir, published this year, on the earlier Mesozoic floras of New Zealand, an extension of a shorter paper read to the Royal Society, is an especially valuable addition to our knowledge of a much neglected subject. Two papers written in collaboration with his friend Major Parkin, on the origin and evolution of the Angiosperms, afford evidence of Arber's power of treating in a philosophical spirit difficult and controversial problems. Among other papers, mention may be made of one on the past history of ferns, and of those on Glossopteris, in which the sporangia are described for the first time, Lagenostoma, Psygmophyllum, Yuccites, Zamites, and Pterophyllum.

Arber had made for himself a name as an authority on the economic side of palæobotany, primarily in connection with the Kent coalfield. It is impossible, in a short article, to give an adequate account of his original work; his output was much greater than that of most men of his years, and, in view of the difficulties with which he had to contend, the amount he was able to accomplish compels our admiration. Arber was a man of strong convictions and had the courage of his opinions; he was unsparing of himself in his devotion to the science which he loved and to the service of his university. Those who knew him well felt for him a deep affection and can most sincerely share the grief of his devoted wife, with whom he enjoyed a true companionship of heart and work.

A. C. SEWARD.

NOTES.

THE Board of Trade has appointed, with the concurrence of the Ministry of Reconstruction, a Committee to examine and report upon the water-power resources of the United Kingdom and the extent to which they can be made available for industrial purposes. The members of the Committee are:—Sir John F. C. Snell (chairman), Mr. G. S. Albright, Sir Dugald Clerk, F.R.S., Dr. J. F. Crowley, Mr. H. F. Carlill, Mr. P. Dawson, Prof. A. H. Gibson, Mr. V. Hartshorn, J.P., Dr. H. R. Mill, Mr. A. Newlands, Mr. G. C. Vyle, Mr. A. J. Walter, Mr. Ralph Walter (Ministry of Reconstruction), and Mr. D. J. Williams. Mr. R. T. G. French is the secretary, and all communications intended for the Committee should be addressed to him at 10 Princes Street, Westminster, S.W.1.

THE twenty-ninth annual meeting of the Museums Association will be held at Manchester on July 9–11 under the presidency of Mr. E. Rimbault Dibdin. Among the subjects to be discussed are:—"The Museum in Relation to Art and Industry," H. Cadness; "The Application of Art to Industry and its Relation to Museum Work," S. E. Harrison; "The Museum and Trade," T. Midgley; and "Arrangement of an Ethnographical Collection," B. H. Mullen.

AT the annual meeting of the American Institute of Electrical Engineers, held last month, Col. J. J. Carty, U.S. Signal Corps, was presented with the Edison medal of the institute in recognition of his services in developing the science and art of telephone engineering

WE regret to note that the death of Mr. John H Heck is recorded in *Engineering* for June 21. Mr Heck was senior engineering surveyor to Lloyd's Register of Shipping in the Glasgow district, and was sixty-seven years of age. He read many papers on engineering subjects before the Institution of Naval Architects, the North-East Coast Institution of Engineers and Shipbuilders, and other technical societies.

THE death is announced in his forty-ninth year of Dr. C. C. Trowbridge, assistant professor of physics at Columbia University, New York. Dr. Trowbridge had made notable contributions to the knowledge of meteors and of the mechanics of bird-flight. One of his principal services to Columbia University was his development of the E. K. Adams precision laboratory, one of the best-planned and best-equipped laboratories in America.

THE registrar of the Institute of Chemistry has received a letter from the Board of Education stating that the Ministry of National Service has cancelled the arrangements made in connection with military service to students of chemistry. The effect of this cancellation is that any student of chemistry in Category B (i), C (i), or B (ii), or in Grade 2, who has hitherto been protected under the arrangements in question will be called up, if otherwise available for service.

WE learn from the *Lancet* that Prof. S. J. Pozzi, professor of clinical gynæcology in the University of Paris, was fatally shot on June 13 in his consulting-room in Paris by a lunatic patient. Prof. Pozzi was born at Bergerac (Dordogne) in 1846. He was educated at the lycées of Pau and Bordeaux, becoming a student of medicine in Paris in 1869, where he was an apt pupil of Paul Broca. From 1885 to 1894 he acted as secretary-general of the French Congress of Surgery, and in 1895 was elected to the Academy of Medicine. He was an honorary fellow of the Royal College of Surgeons of England and an officer of the Legion of Honour.

THE council of the Royal Society of Arts announces that the next award of the Swiney prize will be in January, 1919. Dr. Swiney died in 1844, and in his will he left the sum of 5000*l.* Consols to the society, for the purpose of presenting a prize, on every fifth anniversary of his death, to the author of the best published work on jurisprudence. The prize is a cup, value 100*l.*, and money to the same amount. The award is made jointly by the Royal Society of Arts and the Royal College of Physicians, and is given alternately for works on medical and on general jurisprudence. On the last occasion of the award, in 1914, the prize was awarded for general jurisprudence. It will, therefore, be offered on the present occasion for medical jurisprudence.

ONE of the tasks of the General Staff at the War Office during the war has been the issue of a *Daily Review of the Foreign Press*, the scope of which has been extended from time to time by the preparation of supplements dealing with special subjects. A fortnightly Technical Supplement, compiled with the co-operation of the Institution of Civil Engineers, was added to the list in January last, and since then has been widely circulated through official channels for the assistance of naval and military workers. We are now informed that it has been decided to place the Technical Supplement on sale, and the issues of May 28 and subsequent numbers may be obtained at the cost of sixpence through any bookseller or directly from H.M. Stationery Office at Imperial House, Kingsway, London, W.C.2.

The council of the Institution of Electrical Engineers is prepared to receive papers on the subject of "The Co-ordination of Research in Works and Laboratories," with a view to the paper being read and discussed at one of the ordinary meetings of the institution in London, and also before one or more of the local sections. Papers should not exceed 15,000 to 20,000 words in length, and the council will award a special premium of 25*l.* to the author of the paper which best fulfils the objects of the discussion, provided such paper reaches the standard aimed at by the council. Papers should be sent to the secretary of the institution not later than November 4 next. It is the intention of the council to publish the selected paper (which will become the property of the institution) in the Journal, together with the discussion. Competitors intending to submit papers are invited to communicate with the secretary.

The latest part of the *Geologische Rundschau* (April, 1918) contains much news of geology and allied sciences in Germany and Austria. Prof. W. Branca has retired from his professorship in Berlin, and has been succeeded by Prof. J. Pompecki, of Tübingen. Prof. E. Kayser has similarly retired in Marburg, and his successor is Prof. R. Wedekind. Prof. L. Milch, of Greifswald, has followed the late Prof. Hintze as professor of mineralogy in Breslau, and Prof. E. Hennig, of Berlin, has become professor of geology at Tübingen. Prof. O. Abel has been made ordinary professor of palæobiology in Vienna. The long list of courses of lectures in the universities during the winter semester 1917–18 includes not only the usual general subjects, but also many special subjects in preparation for research. Among these may be mentioned the atomic structure of crystals, the science of gem-stones, alpine geology, palæontology of mollusca, of fishes, amphibia, and reptilia, evolution of the mammalia, the Ice age and early man, and the principles of palæobotany. There are a few technical lectures on coal and petroleum, on the geology of Germany, and also one course at the Colonial Institute at Hamburg on "The Geological Conditions of the German Protectorates." An appreciative obituary notice of Prof. E. W. Benecke, who died at Strasburg on March 6, 1917, aged seventy-nine, is accompanied by a fine portrait.

Mr. T. T. Waterman gives a full history of the Yana group of Indians in North-eastern California in the University of California Publications in American Ethnology and Archæology (vol. xiii., No. 2, February). They are distinguished from their neighbours not so much by physique and culture as by language. They are important because, for certain rather extraordinary reasons, a few members of the group remained conservative much longer than the other Indians in California, retaining their primitive mode of life in a very unusual degree until 1908.

The Rev. S. S. Dorman discusses native ideas of cosmology in the *South African Journal of Science* (vol. xiv., No. 4, November, 1917). The origin of these is obscure, but the writer remarks that the Abenanswa may be a mixed remnant of the old Hamitic stock; Semite and Hamite are very closely related both in blood and language, and very probably had the same or similar legends of Creation. If so, the Abenanswa, like the Masai, could have derived their legends from the north, and the Bantu may have learned them in a more or less complete form. But, on the whole, the writer leans to the conclusion that the Bantu ideas of cosmology are purely their own, and are thus an index of the mentality of that race.

In an interesting article entitled "Some Early Artists of Gloucester," published in vol. xl. of the Transactions of the Bristol and Gloucestershire Archæological Society for 1917, Mr. St. Clair Baddeley discusses the so-called Roman walls of the city. None of the earlier historians—Æthelwerd, Fosbroke, or Atkins—record any tradition of such walls. They were not discovered during the excavations of 1818, nor during the Shire Hall extension in 1909, and it seems clear that Romano-British Glevum never had anything more substantial than the powerful fosse and vallum of other Roman settlements. The remains shown as "Roman" walls are not Romano-British; they are entirely medieval, though probably occupying the convenient line of the Romano-British fosse, and it seems clear that the small Romano-British Glevum, having in its rear the Severn, had no need of elaborate defences. The walls belong to the Norman period when Gloucester became an outpost, like Chester, to guard the country from the incursions of Welsh horsemen.

Messrs. Headley Bros. have sent us two "Papers for the Present," namely, (1) "The Modern Midas," (2) "The Banker's Part in Reconstruction," published by them for the Cities Committee of the Sociological Society. These two papers are the first of a series on economic and social problems intended to educate public opinion in the direction of certain schemes of reconstruction. Their object is to reverse the tendency to centralisation and bureaucracy, in which Germany set a bad example to Western civilisation, and to substitute for it local and spontaneous action in every sphere of life, social, political, and economic. This is combined with an insistence on communal rights, the two objects being reconciled in the maxim, "Individualise the State, socialise the Community." The two papers under notice cover the financial side of this policy. They advocate the conscription of incomes for the period of the war, the nationalisation of credit and of the credit machinery, and the use of the latter for promoting production after the war on lines profitable to the community and beneficial to the worker. On the negative side, the two chief objects of attack are the gold standard and the anti-social powers of modern finance in private hands.

We have received from the Carnegie Institution of Washington a volume entitled "European Treaties bearing on the History of the United States and its Dependencies to 1648." It is edited by Mr. F. G. Davenport, and contains the original texts, with translations and notes, of forty treaties and Papal Bulls, which all deal with the struggle for participation in trade and territorial possession of the lands newly discovered in the fifteenth and sixteenth centuries. The originals of these documents are difficult of access, particularly to the American student, so the present collection should prove very useful. While mainly of historical value, there is much in the early documents of geographical interest. Spanish dominion in the West and Portuguese dominion in Africa and the East were prompted by the Papal Bull of 1493 assigning to Castile the exclusive right to lands west of the meridian situated 100 leagues west of the Azores, lands discovered before Christmas, 1492, to be excepted. A later treaty pushed this line to 370 leagues west of the Cape Verde Islands, and both Portugal and Castile agreed to send caravels with pilots and astrologers to determine the location of the line. But this demarcation never took effect. The confusion caused in territorial rights in the Moluccas by the Pope's failure to extend his line to the further side of the globe is illustrated in later treaties. This confusion had been intensified by the

Bull of 1514, giving Portugal the rights to all lands discovered by her in her voyages to the East irrespective of their longitude. The gradual settlement of these questions is traced in later treaties.

SOME valuable medical studies are in course of publication by the Leland Stanford Junior University, California. Of these we have received "Bone and Joint Studies," by Profs. Leonard W. Ely and J. F. Cowan, and "The Pathology of Nephritis," by Prof. W. Ophüls. In the latter it is considered that many forms of inflammation of the kidney are due to bacterial infections, commonly streptococcal.

ROCKY MOUNTAIN spotted fever is a typhus-like disease occurring in limited tracts of country adjacent to the Rocky Mountains. It is conveyed by the bite of a tick (*Dermacentor andersoni*). Dr. S. B. Wolbach has found present in the endothelium of the blood-vessels a peculiar bacterium which he surmises is the causative organism of the disease (*Journ. Medical Research*, vol. xxiv., 1916, p. 121). He has also found the same organism in infected ticks, but not in ticks proved to be non-infective (*ib.*, vol. xxv., 1916, p. 147). Further studies show that the characteristic lesions of the disease in man are practically restricted to the blood-vessels of the skin and genitalia (*ib.*, vol. xxvii., 1918, p. 499).

IN the May issue of the Journal of the Board of Agriculture Mr. R. Robson discusses the probable causes of the poor crops of clover seed obtained in Essex last summer. Popular opinion was inclined to ascribe the seed shortage primarily to the dearth of bees, owing to the ravages of the Isle of Wight disease. This might certainly account for the failure of white clover (*Trifolium repens*), since there is a general consensus of opinion that the honey-bee is here the chief pollen-carrier. In the case of red clover (*Trifolium pratense*), however, the predominant *rôle* is played by humble-bees, and there is no clear evidence that their numbers had been sensibly reduced by the disease. An alternative explanation of the small crop is the activity of the very destructive weevil, *Apions apricans* (Herbst), which was extremely prevalent last year. The first-cut clover when stacked was infested with maggots resulting from eggs laid by the weevil in the clover flowers, and within a few days the resulting weevils emerged in myriads from the stacks and proceeded to devour the surrounding clover, and then passed on into the field to lay eggs for the next generation. Every head of clover in which eggs were laid would produce few or no seeds. The weevils move preferably along the ground, and it was found possible to trap large numbers by means of bands of cloth coated with tar and pitch stretched round the stacks, or by means of a trench containing water and tar. The opinion is expressed that the depredations of the weevil were the primary cause of the seed shortage, and farmers are advised to adopt measures to prevent the egress of the second generation of weevils from their stacks of first-cut clover.

Now that the electro-culture of crops has reached a position of prominence in the public regard, and has even attained the dignity of being invested with a Government Committee, it will probably be a matter of surprise to many that the idea of stimulating plant-growth by means of electricity is more than a hundred and fifty years old. An interesting article in the April issue of *Science Progress* contributed by Messrs. I. Jørgensen and W. Stiles commences with the statement (quoted from Priestley) that the first experiment on the electrification of growing vegetables was made by Mr. Maimbray in 1746. The fact that our present-day knowledge of the subject is but little greater than that of the middle of the eighteenth century is attributed by the authors to the stagnation of the science of the living plant. The vast majority of the researches on electro-culture made since Maimbray's original experiment are on the same lines as the older ones, and give similar results—*i.e.* most show the beneficial influence of electrification, whilst a minority show no such improvement. The physiological investigations in reference to the subject have dealt with the process of assimilation, transpiration, respiration, irritability, and protoplasmic movement in plants, but in no case have the experiments been conducted in such a way as to furnish any information as to the influence of definite electrical conditions on any one of these processes at any definite stage in the history of the plant. The most important work on electro-culture is that of Lemström, who was the first to treat comparatively large areas of land under crops. His work made it clear that the overhead electric discharge will affect the life of the plant in all its phases, and he concluded that the best results are obtained (1) with the network positively charged, (2) by applying the discharge morning and evening, and (3) by having the general conditions favourable to plant-growth. The authors urge that all the investigators have failed to realise (i) the necessity for measuring the discharge, and (ii) that the stimulating effect depending on its intensity and time of application may differ for different stages of the plant's life, and may appear long after it is applied.

THE Bulletin of the Hawaiian Volcano Observatory for February last is noteworthy for two exceptionally impressive illustrations of the surge of lava in the crater of Halemaumau against central crags rising some 70 ft. above it.

THE glacier that occupied the Irish Sea during the maximum extension of Quaternary ice in the British Isles has played a large part in the distribution of superficial materials, and Mr. J. de W. Hinch (*Irish Naturalist*, vol. xxvii., p. 53) gives an excellent review of recent work in the area, and of the evidence which has rendered the hypothesis of an interglacial submergence both untenable and unnecessary.

A NUMBER of substances crystallise from solutions, taking up water of crystallisation. This water is absorbed in molecular quantities, and is generally given up again easily with gentle heating. Little is known as to how the water is bound in the crystal Investigations on this question are outlined in the *Annalen der Physik* for February 15. A number of different forms of alum are examined, and conclusions are drawn, from spectrum methods, of the structure of the crystals.

A GERMAN firm advertises (*Stahl und Eisen*, February 28) a new air-filter, which is said to be made entirely of iron. The special advantages claimed are:—Great durability and perfect freedom from fire risk; constant resistance (equivalent to from 3 to 4 mm. of water); no oil, grease, or water is employed, the filter being quite dry. There are no running costs for power or attendance, and no spare parts are necessary. Cleaning can be done easily by unskilled workmen. The filter is small in bulk, and can be adapted to the space available. The total capacity of this type delivered or under construction is said to exceed one million cubic metres per hour.

P. SAXL, in the *Gesundheitsingenieur*, describes his investigations on the effect of silver in destroying bacteria in water. It has for a long time been recognised that water that has passed through copper tubes has certain antiseptic properties, and also that metallic silver immersed in the water has an antiseptic action. On this action the author has based the operation of a drinking-water sterilising station. By filling a glass bottle to the brim with water, immersing a silver wire in the bottle so as to reach right down the neck, allowing the bottle to stand for fourteen days, and then pouring out the water, the bottle is found to be left in such a condition that if fresh water is poured in and a silver wire again inserted, the water is rendered germ-free for eight hours. Tests showed that typhoid, cholera, and dysentery bacteria could be destroyed in this way.

IN *Science* for April 26 Prof. S. W. Parr, writing upon developments in the chemical industries of the United States resulting from war conditions, refers to the question of potassium supplies, and indicates the progress which has been made towards rendering the States independent of German sources. At present there is much leeway to make up. Whilst more than 40,000 tons of potassium salts will be produced this year, the pre-war imports were nearly seven times this quantity. Nevertheless, recent developments are both interesting and encouraging. The brines of Nebraska and California are just now by far the largest source of available potassium compounds. Next comes the kelp of the Pacific Coast, the utilisation of which is still in the developing stage, but progressing rapidly. More important still are the alunite deposits in Utah, which likewise are being worked, as yet, on a relatively limited scale. "We are also," says Prof. Parr, "just beginning to get glimpses of the possibilities of potassium salts from cement furnaces, from the greensand of the Eastern States, and from the felspars in various localities. At the present rate the potash problem seems in a fair way of solution."

A VERY interesting lecture delivered before the Chemical Society on February 21 by the Hon. R. J. Strutt on "Active Nitrogen" is reported in the April issue of the Journal of the society. If a stream of rarefied nitrogen passes through a tube in which a vigorous jar discharge is maintained, and then into a second vessel in which there is no discharge, it exhibits a brilliant yellow light in the second vessel. This "after-glow" persists in favourable circumstances for several minutes after the discharge has been shut off. The fact that the luminosity can be maintained only by the passage of the nitrogen from a state of higher to one of lower potential energy would alone suggest the presence of a special form of nitrogen, but this became a certainty when it was found that the gas reacts with gaseous hydrocarbons forming hydrogen cyanide and with metallic vapours giving nitrides. The existence of this "active" nitrogen does not depend on indirect evidence or on obscure spectroscopic phenomena; the hydrogen cyanide can be isolated and identified in the ordinary chemical way. When nitrogen purified by prolonged heating at 300° over sodium is employed the glow is invisible through blue glass, but if oxygen or one of its gaseous compounds (*e.g.* carbonic oxide or dioxide) is introduced into the glowing gas a bluish-violet light is exhibited at the confluence of the two gases. Active nitrogen does not react with hydrogen or oxygen, and the best conditions for its production are a low-pressure and a Leyden jar discharge. Tiede and Domcke were right in asserting that pure nitrogen does not give the phenomenon, but wrong in stating that oxygen is necessary. Other impurities, such as carbonic oxide or dioxide, methane, ethylene, hydrogen sulphide, or mercury vapour, will act equally well.

IN a paper published in the *Monthly Weather Review* for December last Prof. R. DeCourcy Ward discusses the subject of "Meteorology and War Flying." The paper is on the usual lines, and points out how important some knowledge of meteorology is to the airman, and how the various elements—pressure, temperature, etc.—influence flying. Perhaps the most interesting part is that relating to clouds and thunderstorms. Prof. Ward states that it is much safer not to fly in a thunderstorm, and then goes on to give instructions as to the best course to pursue when an aviator finds himself hemmed in between enemy country and an advancing storm.

THE April part of the Proceedings of the Physical Society of London contains two papers on critical angle refractometers of the Pulfrich type by Mr. J. Guild, of the National Physical Laboratory, and by Mr. F. Simeon, of Messrs. Hilger, respectively, which serve as a good illustration of the way in which improvements in instruments can be effected by cooperation between the makers and the users of the instruments. The critical angle refractometer is the most convenient instrument to use in the determination of the refractive indices of glasses of different compositions, and it has been used at the National Physical Laboratory in the examination of more than two thousand specimens. The experience of the instrument gained in the course of this work is embodied in Mr. Guild's paper, and there seems little doubt that in the near future an instrument will be constructed which will give the absolute refractive index and the dispersion of a specimen of glass to the fifth figure after the decimal place.

AN article on the nonius, its origin, theory, and use, by Senhor A. R. Machado, has been published in the *Revista de Quimica pura e aplicada* (Oporto, II. Série, Ano iii., 1918). Being a countryman of Pedro Nunez, the author calls a vernier a nonius, and proceeds to trace the history of this instrument from the book "De crepusculis" by Nunez, published in 1542. In reality, there is no resemblance between the contrivance of Nunez and that of Vernier, published in 1631. Nunez proposed inside the graduated arc of a quadrant to draw concentric arcs and to divide them respectively into 89, 88, 87 . . . 45 equal parts, so that the alidade would always (more or less accurately) touch a division-mark on one of the forty-six circles. Though ingenious, the proposal was anything but a practical one on account of the difficulty of dividing a quadrant into eighty-three or sixty-seven parts. It was improved, though not made much more practical, fifty years later by Curtius, whose idea was published by Clavius. There is nothing new in all this; see, for example, Delambre's "Histoire de l'astronomie moderne," i., p. 253, or Cantor's "Geschichte der Mathematik," ii., p. 580. But no one put a small auxiliary arc on the movable alidade before Vernier. The author of the paper next describes the various uses of the vernier, including Mannheim's double one (vernier de vernier), proposed in the *Journal de Physique*, 1873, to meet the case where none of the divisions of a vernier coincide exactly with a division on the principal scale.

MESSRS. *J. and A. Churchill* announce a translation, by G. W. Robinson, of Dr. M. Gina's "Chemical Combination among Metals." In it the relation between chemical composition and physical properties is discussed. The main portion of the book consists of an account of all intermetallic systems in which compounds occur. Messrs. *C. Griffin and Co., Ltd.*, will shortly publish "Simple Experimental Hygiene, Physiology, and Infant Management for the Use of

Teachers," by K. M. Curwen, with an introduction by Dr. G. W. Reid, County Medical Officer of Health and School Medical Officer for Staffordshire. Messrs. *Longmans and Co.* will issue shortly "Canning and Bottling Fruit and Vegetables," by Mrs. Goodrich, with a preface by Prof. F. W. Keeble. The work deals with simple methods of preserving, such as bottling in jam-jars, drying and salting, and with all up-to-date methods of preserving fruit without sugar.

OUR ASTRONOMICAL COLUMN.

The New Star in Aquila.—The new star in Aquila has continued to decrease in brightness at about the same rate as Nova Persei of 1901. On June 21 and 22 it was observed to be about 3rd magnitude, and its reddish colour had become quite pronounced. Prof. Fowler found that the hydrogen lines were still very brilliant on these dates, and that the most remarkable change since June 16 was the appearance of a broad bright band in the blue, about $\lambda\,464$. The enhanced lines of iron in the green were visible, and also the group of bright and dark lines about the position of D. There was also a dark line near $\lambda\,615$, which had not been noted in the earlier observations, and the continuous spectrum had diminished in brightness. The principal features of the spectrum were readily observed with a Zöllner star spectroscope on a 3-in. telescope

Observations of the spectrum of the nova communicated by Mr. Harold Thomson are in general agreement with those of Prof. Fowler, but attention is also directed to a relative brightening of the line $\lambda\,532$ as compared with that at $\lambda\,517$.

In the *Times* for June 19 Father Cortie gave a brief account of a remarkable photograph taken with the prismatic camera at Stonyhurst on June 15. The exposure was from 10.35 to 11.35 G.M.T., and the photograph appears as if the spectrum had suddenly changed at about 11.5, and as suddenly returned to its original state about five minutes before the end of the exposure. The modified portion of the spectrum shows a second set of bright hydrogen lines, strongly displaced towards the red sides of the normal lines, which are also present, and an enormous receding velocity would be required to explain the displacements. Prof. Fowler has had an opportunity of examining the photograph, and informs us that there are certain features which suggest that an explanation may be found in an instrumental displacement. Apart from this, however, the photograph is a valuable record of the spectrum on the date in question. The bright hydrogen lines consist of three or more components, and there are numerous ill-defined fainter lines, besides several apparent dark lines. The chief features appear to be generally similar to those of Nova Persei at a corresponding phase.

Discovery of a Comet.—The first cometary discovery of the year was made by Mr. Reid at the Cape of Good Hope. It appears as a faint round nebulosity, and is moving south 48′ daily. Its position, June 12·25 G.M.T., was R.A. 9h. 16m. 36s., S. decl. 8° 10′. It is invisible in northern latitudes, setting shortly after sunset.

Bulletins of the Hector Observatory, N.Z.—From recent bulletins of the Hector Observatory, Wellington, N.Z., it would appear that the Government astronomer, Mr. C. E. Adams, is endeavouring to make the institution as useful as possible to the general public. Bulletin No. 10 gives tables of the rising, meridian passage, and setting of the moon during the present year at places on the standard meridian (12h. east of Greenwich) in south latitudes 35°, 40°, and 45°, and it is shown by examples how the times for other places may be obtained by interpolation. The latest arrangements adopted for the time service are explained in Bulletin No. 11. The standard mean-time clock has been fitted with contacts, by which signals are given at the beginning of every hour of G.M.T., and repeated after the lapse of 1, 2, 4, and 5 minutes in each case. A similar system is adopted in connection with the wireless signal sent out at 22h. G.M.T. Another bulletin, issued in February, gives particulars of the occultation of a 6th magnitude star by Venus on March 3, according to calculations made by Pte. Arthur Burnet, secretary of the Leeds Astronomical Society.

THE BRITISH SCIENCE GUILD.

The twelfth annual meeting of the British Science Guild was held at the Mansion House on June 19, the Lord Mayor presiding. The adoption of the annual report was moved by Prof. R. A. Gregory, and seconded by Sir Edward Brabrook. After alluding to the loss sustained by the guild in the death of Sir Alexander Pedler, for many years hon. secretary, Prof. Gregory gave a summary of the work of the various committees on education, the metric system, and the dyes industry. The last-named emphasised the strong financial support given to the German dye industry, aggregating more than 50,000,000*l.*, whereas the total capital of the colour-producing firms in the United Kingdom is only about four millions. In this country the chief need is to survey the great variety of products under manufacture, allocating the work in such a way as to avoid duplication of plant and effort. Reference is made in the report to the British Scientific Products Exhibition to be held at King's College, London, for four weeks during August–September. It is hoped that the exhibition will be helpful in illustrating the need for scientific research in relation to various arts and industries, and the results already achieved in this country in this direction since the war.

After the adoption of the report, an address was given by Lord Sydenham, the president of the guild, on "Education, Science, and Leadership." Our projects of national reconstruction, it was remarked, tend to accentuate industrial and commercial efficiency. But there are other problems the solution of which will require an enlightened democracy and instructed leadership. Our education, besides aiming at material efficiency, must inspire ideals. Lord Sydenham showed, from data relating to universities in this country, in Germany, and in America, that facilities for higher education are still not what they should be. At present only one child in a thousand from the elementary schools reaches a university. National education should provide equal chances for natural talent wherever found.

A paper by Sir Algernon Firth was read, in the absence of the author, by Sir Ronald Ross. The author sought to dispel the impression that manufacturers were not sufficiently alive to the need for research work in their industries, and quoted from the reports of a Board of Trade Sub-Committee to show the efforts being made to bring this matter before the notice of the authorities. Industries were not infrequently hampered owing to lack of knowledge in Government departments. For example, the growth of the dye industry was checked at the start by the refusal of duty-free alcohol. Besides developing facilities for research, it was necessary to provide inducements for youth to make use of them. In this respect we might learn from the enlightened attitude towards college education prevalent in the United States.